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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,262

06/30/2005

Pierre Barberis

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NEW YORK, NY 10004

EXAMINER

SHEVIN, MARK L

ART UNIT

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4116

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11/13/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,262	Applicant(s) BARBERIS ET AL.	
	Examiner Mark L. Shevin	Art Unit 4116	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>30 June 2005</u> . | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Status

1. Claims 1-5 have been canceled per Applicant's preliminary amendment filed 06/30/2005. Claims 6-10, filed 06/30/2005 are pending.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. **Claims 6-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Charquet** (US 5,674,330).

Regarding claim 6, Charquet discloses (column 4, lines 55-60) the production of an ingot by casting a Zr alloy containing at least 97% of Zr, then forging the same at a temperature between 700 and 1100 C, i.e. a temperature at which said Zr alloy can be in a state comprising crystalline phases alpha and beta of said Zr alloy, in order to produce a prefabricated product (a blank or semi-finished product) having a thickness of

100 mm. The forging operation is followed by a step of hot rolling the prefabricated product at a temperature of between 930 and 970 C. Only one forging operation is envisaged in the method (see column 4, line 65 to column 5, line 32; and figure 1).

Charquet does not teach the specific size of the ingot, however one of ordinary skill would be able alter the size of the ingot produced through routine optimization. Where the only differences between the prior art and the instant claims are relative dimensions and the article having the claimed relative dimensions would not performed differently than the prior art device, the claimed article is not patentably distinct from the prior art article.

The claimed invention, taken as a whole, would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the teachings of Charquet.

Regarding claims 7 and 8, the amount of alpha phase present in the billet during forging can be easily optimized through routine optimization and by consulting a phase diagram that is well known to metallurgists. The temperature range at which a given zirconium alloy will contain both the alpha and beta phase will vary depending on the alloy composition, and the temperature range can be selected by routine optimization depending on the alloy used.

Regarding claim 9, one of ordinary skill in the metallurgical arts would have a reasonable expectation of success in carrying out the claimed process with a more heavily alloyed zirconium ingot as this would not affect the claimed aspects of the ingot production and forging steps. Neither the alloy nor the broad process would be effected

-- e.g. if a beta phase stabilizer were added, then the forging temperature could be changed, as long as it is took place in the alpha+beta phase field. Furthermore, Charquet teaches that his process relates to the production of a flat product (sheet) using a zirconium alloy with 0.5 – 2.0% Sn and with possible supplementary additions of niobium and vanadium. From these additional alloying elements, one can surely envision the process being carried out on an alloy with more than 3% of additive elements. Additionally the alloy to be used in the forging process could be selected by routine optimization depending on the needs of the semi-finished product.

Regarding claim 10, Charquet teaches that zirconium sheets in the size range of 0.8 to 3.5 mm are known in the prior art as fuel elements (nuclear fuel assembly) casings for nuclear reactors (column 1, lines 13-21). Given that Charquet discloses subsequent hot and cold rolling of a zirconium alloy blank (flat product), Charquet clearly envisions a flat product with a thickness in the claimed range. Furthermore, one of ordinary skill could alter the size of the flat product produced through routine optimization.

5. **Claims 6-10** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Sabol** (EP 0.085.552).

Regarding claim 6, Sabol, in his background section, teaches it is known in the prior that nuclear grade Zircaloy (Zr-Sn) alloy products are made by producing an ingot having a diameter between 16 and 25 inches, which corresponds to between 406 and 635 mm respectively. The ingot is then heated into the beta, *alpha+beta*, or high temperature alpha phase and then worked to some intermediate sized and shaped billet

(page 2, lines 5-12). This working step may be performed by forging (page 2, lines 12-13).

Overall, Sabol teaches that after a first step of producing an ingot, and then forging this ingot to produce a semi-finished product (intermediate billet, page 2, line 14). Sabol envisages the option of having a single forging step (page 2, lines 12-19; page 4, lines 6-13).

Sabol does not teach the specific claim limitations involving the length of the ingot or the size of the semi-finished product produced by a single forging operation, however one of ordinary skill would be able alter the size of the ingot and semi-finished product through routine optimization.

The claimed invention, taken as a whole, would have been obvious to one of ordinary skill in the art at the time the invention was made in view of the teachings of Sabol. Furthermore, there are repeated references to later operations as being adjustable or tailored to the size and shape of the ingot billet (page 2, lines 29-35).

Regarding claims 7 and 8, the amount of alpha phase present in the billet during forging can be easily optimized through routine optimization and by consulting a phase diagram that is well known to metallurgists. The temperature range at which a given zirconium alloy will contain both the alpha and beta phase will vary depending on the alloy composition, and the temperature range can be select by routine optimization depending on the alloy used.

Regarding claim 9, one of ordinary skill in the metallurgical arts would have a reasonable expectation of success in carrying out the claimed process with a more

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heavily alloyed zirconium ingot as this would not affect the claimed aspects of the ingot production and forging steps. Neither the alloy nor the broad process would be effected -- e.g. if a beta phase stabilizer were added, then the forging temperature could be changed, as long as it is took place in the alpha+beta phase field. Additionally the alloy to be used in the forging process could be selected by routine optimization depending on the needs of the semi-finished product.

Regarding claim 10, Sabol further teaches that where a final material of a rectangular cross section (flat product) is desired additional reductions (rolling) may be performed. The Examiner infers from this that additional rolling operations can be performed on the slab (billet) to yield a flat product of any given dimension. One of ordinary skill could alter the size of the flat product produced through routine optimization. Furthermore, Sabol teaches that the zirconium alloys (Zircaloy) mentioned in Sabol's specification, were initially developed as cladding materials for nuclear components (nuclear fuel assembly), see page 1, lines 8-10.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. **Claims 6-10** are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11, 12, 13, and 18 respectively of copending Application No. 10-541,774. Although the conflicting claims are not identical, they are not patentably distinct from each other because for the following reasons:

Regarding claims 6 and 10, claim 11 of the copending application discloses producing an ingot of at least 97% zirconium and then forging the ingot in a first stage in an alpha+beta phase field. The instant claim 6, although limited to producing a 100 mm slab from a single forging operation is obvious in view of the claimed two step forging process of claim 11 in the copending application as one of ordinary skill could very well perform the first forging operation of claim 11 ('774 application) such that a 100 mm slab is formed, with the second forging operation taking place outside the scope of the instant claim 6. The semi-finished product of claim 11 in the copending application implies (intended for production of at least one elongated product...) that this forged zirconium intermediate product will be later worked to form another elongated product of a given size, possibly including the claimed thickness of 0.2 – 4 mm depending on the 'elongation' required.

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Regarding claims 7-9, the copending application features nearly identical dependent claim limitations in claims 12, 13, and 18 featuring limits of the alpha phase present, the temperature of the alpha+beta phase field forging operation, and substitution of a more heavily alloy zirconium product, respectively.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

1. Claims 6-10 are rejected

2. No claims are allowed

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark L. Shevin whose telephone number is (571) 270-3588. The examiner can normally be reached on Monday - Thursday, 8:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark L. Shevin/
Examiner
GAU 4116
10-541,262

/Vickie Kim/
Supervisory Patent Examiner, Art Unit 4116